Amendments to the Specification:

Please add the following new paragraph at page 1, line 3:

Cross Reference to Related Applications

This application is a continuation of U.S. application Serial No.10/315,560, filed December 10, 2002, which is a continuation of U.S. application Serial No. 09/776,942, filed January 17, 2001, now U.S. Patent No. 6,556,326, which is a continuation of U.S. application Serial No. 08/771,097, filed December 20, 1996, now abandoned.

Please replace the paragraph at page 7, lines 3 to 11 with the following amended paragraph:

FIG. 2 shows a series of typical waveforms representing output signal 108 when the periodic waveform providing the additional amplitude modulation is a sinusoidal function. Each waveform, which comprises twelve bits, results from a different level of modulation depth imparted by the amplitude modulator 107. Adjacent to each waveform is its corresponding eye diagram. Waveform 201 and its corresponding eye diagram 202 are typical examples of a conventional NRZ waveform. Waveforms 203, 205, 207, 209, and 211, which respectively correspond to eye diagrams 204, 206, 208, 210, and 212, show waveforms for amplitude modulation levels of 20%, 40%, 60%, 80%, and 90%, respectively.

Please replace the paragraph at page 11, lines 6 to 24 with the following amended paragraph:

The experimental results presented in FIG. 5 were obtained from a transmitter of the type shown in FIG. 4, which incorporated an NRZ transmitter having synchronous amplitude, phase, and polarization modulation. The transmission path, which used circulating loop techniques, extended 9,300 kms and employed twenty WDM channels, each operating at a bit rate of 5.0 Gbits/sec with an average launch power of +7 dBm for all of the channels. The experiment was similar to the results for a twenty channel system presented by Bergano and Davidson in IEEE Journal of Lightwave Technology, Vol. 14, No. 6, p.1299 June 1996, except that in the present arrangement the EDFAs were pumped at 980 nm, which improved the noise figure and increased the transmission distance. FIG. 5 shows the resulting Q-factor (i.e. the electrical signal-to-noise ratio) versus the depth of modulation for channels 3 and 19. The two channels are representative of two different chromatic dispersion regimes of the system. Channel 3, located at 6.8 nm below the zero dispersion wavelength λ_0, had an average dispersion of –[[ ]]0.51 ps/km-nm and channel 19, located at 2.8 nm above the zero dispersion wavelength λ_0, had an average dispersion of +0.21 ps/km-nm. The data indicates that good Q-factor performance can be achieved by selecting an appropriate value for the depth of modulation. The appropriate value differs from both the pure NRZ format (0% depth of modulation) and the RZ format (greater than 100% depth of modulation). FIG. 5 also provides a definition used to calculate the depth of modulation.

Please replace the paragraph at page 11, line 25 to page 12, line 21 with the following amended paragraph:

FIG. 6 is an example of a transmission system including a transmitter, receiver, transmission path, and telemetry path in accordance with the present invention. Shown are a synchronously modulated transmitter 601 such as shown in FIGS. 1 or 4, transmission medium 602, and telemetry path 603 which connects equipment at the receiver side to the transmitter side to feedback a characteristic of the received signal such as the Q-factor. Transmission medium 602, for purposes of this example, but not as a limitation on the invention, is a chain of optical amplifiers and single-mode optical fibers. These elements are well known in the art. Transmitter 601 produces an optical information signal whose amplitude, and/or optical phase and polarization is synchronously modulated as described above. At the receiver, the Q-factor is measured as an indication of transmission performance with a Q-factor measurement apparatus 605. The Q-factor, which provides a method for determining the transmission performance of signals after propagation through lightwave systems, is discussed in Bergano et al., IEEE Phot. Tech. Lett., Vol. 5, No. 3, March 1993. Apparatus 605 could be, for example, a Q measurement unit manufactured by Advantest under the model number D3281. The Q-factor is sent back to the transmitter 601 via telemetry path 603. It will be appreciated by those skilled in the art that it may be desirable, in some applications, for telemetry path 603 to be part of the same transmission system, such as overhead bits in a SDH frame, or an order-wire channel, or be transmitted on a different channel, such as a separate phone line. The Q-factor is received and processed by a logic element that may be located, for example, within the synchronously modulated transmitter 601. The logic element controls the level and the relative timing of the various modulation stages imparted to the signal ~~60~~ from transmitter 601 to maximize the received Q-factor. This type of feedback system could assist in maintaining adequate

transmission performance in the presence of a fading channel, which can be caused by polarization effects.